Complete Summary

GUIDELINE TITLE

Influenza vaccination of health-care personnel. Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP).

BIBLIOGRAPHIC SOURCE(S)

Pearson ML, Bridges CB, Harper SA. Influenza vaccination of health-care personnel: recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2006 Feb 24;55(RR-2):1-16. [137 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Influenza

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Allergy and Immunology
Emergency Medicine
Family Practice
Geriatrics
Infectious Diseases
Internal Medicine
Pediatrics
Pharmacology
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Emergency Medical Technicians/Paramedics
Health Care Providers
Hospitals
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To summarize recommendations by the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP) for influenza vaccination of health-care personnel
- To supplement the ACIP's previous statement regarding use of influenza vaccine and antiviral agents

TARGET POPULATION

Health-care personnel, which includes all paid and unpaid persons working in health-care settings who have the potential for exposure to infectious materials

Note: The recommendations in this report apply to health-care personnel in acute care hospitals, nursing homes, skilled nursing facilities, physician's offices, urgent care centers, and outpatient clinics, and to persons who provide home health care and emergency medical services.

INTERVENTIONS AND PRACTICES CONSIDERED

1. Annual immunoprophylaxis of health-care personnel using either:
    - Inactivated trivalent influenza vaccine (FluZone®, Fluvirin™, Fluarix™)
    - Live attenuated influenza vaccine (FluMist™)
2. Evidence based approaches to maximize vaccination rates among health-care personnel, including:
    - Staff education
    - Providing vaccination at work site at no cost
    - Vaccination clinics
    - Mobile carts
    - Vaccination access during all work shifts
    - Modeling and support by institutional leaders

MAJOR OUTCOMES CONSIDERED

- Influenza rates among health-care personnel (HCP)
- Efficacy and effectiveness of influenza vaccination
- Vaccination coverage levels among HCP
- Relationship between vaccination rates of HCP and patient outcomes
- Cost effectiveness
- Effectiveness of strategies for improving HCP vaccination rates
- Side effects and adverse reactions of influenza vaccination

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases
Searches of Unpublished Data

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The recommendations were drafted after review of peer-reviewed scientific articles, and whenever possible are based on well-designed studies; certain recommendations are based on strong theoretic rationale and expert opinion.

The committees involved in drafting and reviewing these recommendations included persons with expertise in infectious diseases, infection control, pediatrics, vaccinology, internal medicine, and public health.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Healthcare Infection Control Practices Advisory Committee (HICPAC) Categorization Scheme for Recommendations*

Category IA. Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies

Category IB. Strongly recommended for implementation and supported by certain experimental, clinical, or epidemiologic studies and a strong theoretic rationale

Category IC. Required for implementation, as mandated by federal or state regulation or standard

Category II. Suggested for implementation and supported by suggestive clinical or epidemiologic studies, or a theoretic rationale

No recommendation is offered. Unresolved issue; practices for which insufficient evidence or no consensus regarding efficacy exist

* Categorized on the basis of existing scientific data, theoretic rationale, applicability, and economic impact.

COST ANALYSIS

Cost-Effectiveness of Influenza Vaccine

Cost-effectiveness studies of adults aged <65 years indicate that vaccination can reduce both direct medical costs and indirect costs from work absenteeism, resulting in 13 to 44% fewer health-care provider visits, 18 to 45% fewer lost workdays, 18 to 28% fewer days working with reduced effectiveness, and a 25% decrease in antibiotic use for influenza-like illness. Among healthy persons aged 18 to 64 years, vaccination can save an estimated $60 to $4,000 per illness, depending on the cost of vaccination, the influenza attack rate, and vaccine effectiveness against influenza-like illness. In another economic analysis, vaccination resulted in an average annual cost savings of $13.66 per person vaccinated; however, other analyses have not demonstrated cost savings. Among studies of healthy young adults, >70% of the costs prevented were associated with reductions in lost work productivity.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

All recommendations have been approved by the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The categorization scheme for recommendations (IA, IB, IC, II, No recommendation) is provided at the end of the "Major Recommendations" field.

Summary Recommendations

- Educate health-care personnel (HCP) regarding the benefits of influenza vaccination and the potential health consequences of influenza illness for themselves and their patients, the epidemiology and modes of transmission, diagnosis, treatment, and nonvaccine infection control strategies, in accordance with their level of responsibility in preventing health-care-associated influenza (category IB).
- Offer influenza vaccine annually to all eligible HCP to protect staff, patients, and family members and to decrease HCP absenteeism. Use of either available vaccine (inactivated and live, attenuated influenza vaccine [LAIV]) is recommended for eligible persons. During periods when inactivated vaccine is in short supply, use of LAIV is especially encouraged when feasible for eligible HCP (category IA).
- Provide influenza vaccination to HCP at the work site and at no cost as one component of employee health programs. Use strategies that have been demonstrated to increase influenza vaccine acceptance, including vaccination clinics, mobile carts, vaccination access during all work shifts, and modeling and support by institutional leaders (category IB).
- Obtain a signed declination from HCP who decline influenza vaccination for reasons other than medical contraindications (category II).
- Monitor HCP influenza vaccination coverage and declination at regular intervals during influenza season and provide feedback of ward-, unit-, and specialty-specific rates to staff and administration (category IB).
- Use the level of HCP influenza vaccination coverage as one measure of a patient safety quality program (category II).

Strategies for Improving HCP Vaccination Rates

Refer to the "Description of the Implementation Strategy" field in this summary or to the original guideline document for information on this topic.

Recommendations for Using Inactivated Influenza Vaccine and LAIV Among HCP

All HCP should be vaccinated annually against influenza. Either inactivated influenza vaccine or LAIV can be used to reduce the risk for influenza among HCP (see Table below). LAIV is approved for use only among nonpregnant healthy persons aged 5 to 49 years. HCP who work with severely immunocompromised patients who require a protected environment should not receive LAIV. Inactivated influenza vaccine is approved for all persons aged ≥6 months who lack vaccine contraindications, including those with high-risk conditions (see "Recommendations for Prioritization of Influenza Vaccine During the 2005-06 Influenza Season" in the original guideline document). Four influenza vaccines have been approved for use in the United States during the 2005-06 season (see Table 3 in the original guideline document).

Table: Live, attenuated influenza vaccine (LAIV) compared with trivalent inactivated influenza vaccine

Factor	LAIV	Trivalent inactivated Influenza vaccine
Route of administration	Intranasal spray	Intramuscular injection
Type of vaccine	Live virus	Killed virus
No. of included virus strains	3 (2 influenza A, 1 influenza B)	Same as LAIV
Vaccine virus strains updated	Annually	Same as LAIV
Frequency of administration	Annually	Same as LAIV
Approved age and risk groups[1]	Healthy persons aged 5 to 49 yrs	Persons aged ≥6 mos
Can be administered to family members or close contacts of immunosuppressed persons not requiring a protected environment	Yes	Yes
Can be administered to family members or close contacts of immunosuppressed persons requiring a protected environment (e.g., hematopoietic stem cell transplant recipient)	Inactivated influenza vaccine preferred	Yes
Can be administered to family members or close contacts of persons at high risk but not severely immunosuppressed	Yes	Yes
Can be simultaneously administered with other vaccines	Yes[2]	Yes[3]
If not simultaneously administered, can be administered within 4 weeks of another live vaccine	Prudent to space 4 weeks apart	Yes
If not simultaneously administered, can be administered within 4 weeks of an inactivated vaccine	Yes	Yes

[1] Populations at high risk from complications of influenza infection include persons aged ≥65 years; residents of nursing homes and other chronic-care facilities that house persons with chronic medical conditions; adults and children with chronic disorders of the pulmonary or cardiovascular systems; adults and children with chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression; children and adolescents receiving long-term aspirin

therapy (at risk for Reye syndrome after wild-type influenza infection); pregnant women; and children aged 6-23 months.
[2] No data are available regarding effect on safety or efficacy.
[3] Inactivated influenza vaccine coadministration has been evaluated systematically only among adults with pneumococcal polysaccharide vaccine.

Inactivated Influenza Vaccine Recommendations

Dosage and Route

Because immunity declines during the year after vaccination, HCP eligible to receive inactivated influenza vaccine should be administered 1 dose of the current year's vaccine each year (Cate et al., 1983; Kunzel et al., 1996). The intramuscular route is recommended for inactivated influenza vaccine. Adults should be vaccinated in the deltoid muscle, ideally by using a needle of length >1 inch because needles of length <1 inch might not penetrate muscle tissue in certain adults (Poland et al., 1997).

Persons Who Should Not be Vaccinated with Inactivated Influenza Vaccine

Refer to the "Contraindications" field in this summary or to the original guideline document for information on this topic.

LAIV Recommendations

Using LAIV for HCP

LAIV may be used for vaccination of healthy, nonpregnant persons aged 5 to 49 years, including HCP. When feasible, use of LAIV for vaccination of eligible HCP is especially encouraged during periods of limited supply of inactivated influenza vaccine because use of LAIV for HCP might increase availability of inactivated influenza vaccine for persons at high risk. Use of LAIV also provides an alternative vaccine strategy for HCP who avoid influenza vaccination because of an aversion to intramuscular injections.

Persons Who Should Not Receive LAIV

Refer to the "Contraindications" field in this summary or to the original guideline document for information on this topic.

LAIV Dosage and Administration

Eligible HCP should receive 1 dose of LAIV. LAIV is intended only for intranasal administration and should not be administered by the intramuscular, intradermal, or intravenous route. Administration can be accomplished by holding an individual sprayer in the palm of the hand until thawed, with subsequent immediate administration. Alternatively, the vaccine can be thawed in a refrigerator and stored at 35.6 to 46.4 degrees F (2 to 8 degrees C) for $\leq$60 hours before use. Vaccine should not be refrozen after thawing. LAIV is supplied in a prefilled single-use sprayer containing 0.5 mL of vaccine. Approximately 0.25 mL is sprayed into the first nostril while the recipient is in the upright position. An attached dose-divider clip is removed from the sprayer to administer the second half of the dose

into the other nostril. If the vaccine recipient sneezes after administration, the dose should not be repeated.

LAIV may be administered to persons with minor acute illnesses (e.g., diarrhea or mild upper respiratory tract infection, with or without fever). However, if clinical judgment indicates the presence of nasal congestion that might impede delivery of vaccine to the nasopharyngeal mucosa, deferral of administration should be considered until resolution of the illness.

Whether concurrent administration of LAIV with other vaccines affects the safety or efficacy of either LAIV or the simultaneously administered vaccine is unknown. In the absence of specific data indicating interference, adherence to the Advisory Committee on Immunization Practices' (ACIP's) general recommendations for vaccination is prudent. Inactivated vaccines do not interfere with the immune response to other inactivated vaccines or to live vaccines. An inactivated vaccine can be administered either simultaneously or at any time before or after LAIV. Whenever possible, two live vaccines not administered on the same day should be administered >4 weeks apart.

Recommended Vaccines for HCP Who Have Close Contact with Severely Immunosuppressed Persons

Inactivated influenza vaccine is the preferred vaccine for use among HCP who have close contact with severely immunosuppressed persons (e.g., patients with hematopoietic stem cell transplants) during those periods in which the immunosuppressed person requires care in a protective environment. The rationale for not using LAIV among HCP caring for such patients is the theoretic risk that a live, attenuated vaccine virus could be transmitted to the severely immunosuppressed person. HCP who receive LAIV should refrain from contact with severely immunosuppressed patients for 7 days after vaccine receipt. In addition, visitors who have received LAIV should refrain from contact with severely immunosuppressed persons for 7 days after vaccination; however, such persons need not be excluded from visitation of patients who are not severely immunosuppressed. Either inactivated influenza vaccine or LAIV can be used to vaccinate HCP who have close contact with persons with lesser degrees of immunosuppression (e.g., persons with diabetes, persons with asthma taking corticosteroids, or persons infected with human immunodeficiency virus [HIV]) or who are in close contact with all other persons at high risk.

Personnel Who May Administer LAIV

The risk of acquiring vaccine viruses from the environment is unknown but likely small. Nevertheless, severely immunosuppressed persons should not administer LAIV because introduction of low levels of vaccine virus into the environment probably cannot be avoided when administering LAIV. However, other persons with conditions placing them at high risk for influenza complications (e.g., pregnant women, persons with asthma, and persons aged >50 years) may administer LAIV.

LAIV and Use of Influenza Antiviral Medications

How LAIV coadministration with influenza antiviral medications affects safety and efficacy has not been studied. However, because influenza antivirals reduce replication of influenza viruses, LAIV should not be administered until 48 hours after cessation of influenza antiviral therapy, and influenza antiviral medications should not be administered for 2 weeks after receipt of LAIV.

LAIV Storage

LAIV must be stored at 5 degrees F (-15 degrees C) or colder. LAIV may be stored in frost-free freezers without using a freezer-box. LAIV can be thawed in a refrigerator and stored at 35.6 to 46.4 degrees F (2 to 8 degrees C) for ≤60 hours before use. It should not be refrozen after thawing. Additional information regarding LAIV storage is available at http://www.FluMist.com.

Vaccination of Specific HCP Populations

Pregnant Women

Pregnant women are at increased risk for influenza-related complications and hospitalizations. Therefore, all HCP who are pregnant during the influenza season should be vaccinated against influenza. However, pregnant women should receive only inactivated influenza vaccine; LAIV is not recommended for use during pregnancy. Inactivated influenza vaccine may be administered in any trimester. One study of influenza vaccination of approximately 2,000 pregnant women demonstrated no adverse fetal effects associated with receipt of inactivated influenza vaccine.

Breastfeeding Mothers

Influenza vaccine does not affect the safety of mothers who are breastfeeding or their infants. Breastfeeding does not adversely affect the immune response and is not a contraindication for vaccination.

Persons Infected with HIV

Detailed information on the use of influenza vaccine among persons infected with HIV has been published previously. Because influenza can result in serious illness and influenza vaccination can result in the production of protective antibody titers, vaccination with inactivated vaccine will benefit HIV-infected persons, including those that are pregnant.

Timing of Annual Influenza Vaccination of HCP

Timing of Organized Vaccination Campaigns

Planning for influenza campaigns should begin as early as February or March (National Foundation for Infectious Diseases, 2003). The optimal time to vaccinate HCP is during October-November. Beginning in October each year, health-care facilities should offer influenza vaccinations to all full- and part-time staff. Particular emphasis should be placed on vaccinating HCP who care for persons at high risk. Vaccination programs should educate HCP regarding the benefits of

vaccination and the potential health consequences of influenza illness for themselves and their patients. As part of employee health programs, all HCP should be provided convenient access to free influenza vaccine at the work site ("Interventions to increase," 2005).

Vaccination in December and Later

To improve vaccine coverage among HCP, influenza vaccine should continue to be offered in December and throughout the influenza season as long as vaccine supplies are available, even after influenza activity has been documented in the community. In the United States, seasonal influenza activity can increase as early as October or November, but influenza activity has not reached peak levels in the majority of recent seasons until late December-early March. Therefore, although the timing of influenza activity can vary by region, vaccine administered after November is likely to be beneficial in the majority of influenza seasons. Adults achieve peak antibody protection against influenza infection 2 weeks after vaccination.

Recommendations for Prioritization of Influenza Vaccination During the 2005-06 Influenza Season

Refer to the original guideline document for information on this topic.

Side Effects and Adverse Reactions Associated with Vaccination

Refer to the "Potential Harms" field in this summary or to the original guideline document for information on this topic.

Definitions:

Healthcare Infection Control Practices Advisory Committee (HICPAC) Categorization Scheme for Recommendations*

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

Whenever possible the recommendations are based on well-designed studies; certain recommendations are based on strong theoretic rationale and expert opinion.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Vaccination of health-care personnel is an important component of influenza prevention programs in the United States. Vaccination of health-care personnel reduces transmission of influenza in health-care settings, staff illness and absenteeism, and influenza-related morbidity and mortality among persons at increased risk for severe influenza illness.

POTENTIAL HARMS

Side Effects and Adverse Reactions Associated with Vaccination

Inactivated Influenza Vaccine

When educating health-care personnel (HCP) regarding potential side effects, providers should emphasize that 1) inactivated influenza vaccine contains noninfectious killed viruses and cannot cause influenza; and 2) coincidental respiratory disease unrelated to influenza vaccination can occur after vaccination. The occurrence of vaccine-related side effects has had limited to no impact on rates of absenteeism among HCP.

Local Reactions

The most frequent side effect of vaccination (affecting 10 to 64% of patients) is soreness at the vaccination site, typically lasting <2 days. Local reactions typically are mild and rarely interfere with a person's ability to conduct everyday activities. In a controlled trial, only body aches (25.1%) were reported more frequently after inactivated influenza vaccine than placebo-injection (20.8%).

Systemic Reactions

Fever, malaise, myalgia, and other systemic symptoms can occur after vaccination with inactivated vaccine and most often affect persons (e.g., infants) with no previous exposure to the influenza virus antigens in the vaccine. Such reactions typically begin 6 to 12 hours after vaccination and can persist for 1 to 2 days. Recent placebo-controlled trials demonstrate that among older persons and healthy young adults, administration of split-virus (i.e., detergent-disrupted virion) influenza vaccine is not associated with higher rates of systemic symptoms (e.g., fever, malaise, myalgia, and headache) compared with placebo injections. No increase in asthma exacerbations has been documented in association with receipt of influenza vaccine.

Severe Adverse Events

Immediate and presumably allergic reactions (e.g., hives, angioedema, allergic asthma, and systemic anaphylaxis) rarely occur after influenza vaccination. These reactions probably result from hypersensitivity to certain vaccine components; the majority of reactions probably are caused by residual egg protein. Although current influenza vaccines contain only a limited quantity of egg protein, this protein can induce immediate hypersensitivity reactions among persons who have severe egg allergy. Persons who have had hives or swelling of the lips or tongue, or who have experienced acute respiratory distress or collapse after eating eggs should consult a physician for appropriate evaluation to help determine if vaccine should be administered. Persons who have documented immunoglobulin E (IgE)-mediated hypersensitivity to eggs, including those who have had occupational asthma or other allergic responses to egg protein, might also be at increased risk for allergic reactions to influenza vaccine, and consultation with a physician should be considered. Protocols have been published for administering influenza vaccine safely to persons with egg allergies.

Hypersensitivity reactions to any vaccine component can occur. Although exposure to vaccines containing thimerosal can lead to induction of hypersensitivity, the majority of patients do not have reactions to thimerosal when it is administered as a component of vaccines, even when patch or intradermal tests for thimerosal allergy indicate hypersensitivity. When reported, hypersensitivity to thimerosal typically has consisted of local, delayed hypersensitivity reactions.

Guillain-Barré Syndrome (GBS)

Investigations to date indicate no substantial increase in GBS associated with influenza vaccines (other than the 1976 swine influenza vaccine). If current influenza vaccines pose a risk for GBS, the estimated risk is approximately one additional case per million persons vaccinated, with the total combined number of GBS cases peaking 2 weeks after vaccination. This estimated risk for GBS is substantially less than the risk for severe influenza, which can be prevented by vaccination among all age groups, especially persons aged $\geq$65 years and those who have medical indications for influenza vaccination. The potential benefits of influenza vaccination in preventing serious illness, hospitalization, and death substantially outweigh the possible risks for experiencing vaccine-associated GBS. The average case-fatality ratio for GBS is 6% and increases with age. No evidence

indicates that the case-fatality ratio for GBS differs among vaccinated persons and those not vaccinated.

Incidence of GBS among the general population is low, but persons with a history of GBS have a substantially greater likelihood of subsequently experiencing GBS than persons without such a history. Whether influenza vaccination might increase the risk for recurrence of GBS is unknown; for this reason, persons who are not at high risk for severe influenza complications and who are known to have experienced GBS within 6 weeks after a previous influenza vaccination should not receive vaccine. Chemoprophylaxis using influenza antivirals might be an alternative for such persons. Although data are limited, for the majority of persons who have a history of GBS and who are at high risk for severe complications from influenza, the established benefits of influenza vaccination justify yearly vaccination. Health-care professionals should promptly report all clinically significant adverse events after influenza vaccination to the Vaccine Adverse Event Reporting System (VAERS), even if evidence is lacking that the vaccine caused the event.

Live, Attenuated Influenza Vaccine (LAIV)

Until additional data are available, persons at high risk for experiencing complications from influenza infection (e.g., immunocompromised patients; patients with asthma, cystic fibrosis, or chronic obstructive pulmonary disease; or persons aged $\geq$65 years) should not be vaccinated with LAIV. Protection from influenza among these groups should be accomplished by using inactivated influenza vaccine.

Among adults, runny nose or nasal congestion (28 to 78%), headache (16 to 44%), and sore throat (15 to 27%) have been reported more often among vaccine recipients than placebo recipients. In one clinical trial among a subset of healthy adults aged 18 to 49 years, signs and symptoms reported more frequently among LAIV recipients (n = 2,548) than placebo recipients (n = 1,290) within 7 days after each dose included cough (13.9% and 10.8%, respectively); runny nose (44.5% and 27.1%, respectively); sore throat (27.8% and 17.1%, respectively); chills (8.6% and 6.0%, respectively); and tiredness or weakness (25.7% and 21.6%, respectively). Pneumonia, bronchitis, bronchiolitis, or central nervous system events have not been observed more frequently among LAIV than among placebo recipients.

Severe Adverse Events

Serious adverse events associated with receipt of LAIV among healthy adults aged 18 to 49 years occur at a rate of <1%. However, surveillance should continue for adverse events that might not have been detected in previous studies. Health-care professionals should promptly report to VAERS all clinically significant adverse events after LAIV administration, even if evidence is lacking that the vaccine caused the event.

CONTRAINDICATIONS

CONTRAINDICATIONS

Persons Who Should Not Be Vaccinated with Inactivated Influenza Vaccine

Inactivated influenza vaccine should not be administered to persons known to have anaphylactic hypersensitivity to eggs or to other components of the influenza vaccine without first consulting a physician (see Side Effects and Adverse Reactions Associated with Vaccination in "Potential Harms" field in this summary). Prophylactic use of antiviral agents is an option for preventing influenza among such persons. However, persons who have a history of anaphylactic hypersensitivity to vaccine components but who are also at high risk for complications from influenza can benefit from vaccine after appropriate allergy evaluation and desensitization. Information regarding vaccine components is located in package inserts from each manufacturer. Persons with acute febrile illness typically should not be vaccinated until their symptoms have abated. However, minor illnesses with or without fever do not contraindicate use of influenza vaccine.

Persons Who Should Not Receive Live, Attenuated Influenza Vaccine (LAIV)

The following populations should not receive LAIV:

- Persons aged <5 years or >50 years*
- Persons with asthma, reactive airways disease, or other chronic disorders of the pulmonary or cardiovascular systems; persons with other underlying medical conditions, including metabolic diseases such as diabetes, renal dysfunction, and hemoglobinopathies; or persons with known or suspected immunodeficiency diseases or who are receiving immunosuppressive therapies*
- Children or adolescents receiving aspirin or other salicylates (because of the association of Reye syndrome with wild-type influenza infection)*
- Persons with a history of Guillain-Barré syndrome (GBS)
- Pregnant women*
- Persons who have close contact with severely immunosuppressed persons (e.g., patients with hematopoietic stem cell transplants) during those periods in which the immunosuppressed person requires care in a protective environment
- Persons with a history of hypersensitivity, including anaphylaxis, to any of the components of LAIV or to eggs

*These persons should receive inactivated influenza vaccine.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Strategies for Improving Health-Care Personnel (HCP) Vaccination Rates

Facilities that employ HCP are strongly encouraged to provide vaccine to staff by using evidence-based approaches that maximize vaccination rates. Successful HCP vaccination programs are multifaceted and combine publicity and education to combat fears and misconceptions about influenza and influenza vaccines, use of reminder recall systems, efforts to remove administrative and financial barriers, role modeling, and monitoring and feedback on vaccination coverage. In contrast, single-component interventions will likely have minimal effectiveness in achieving desired vaccination coverage levels.

Education and Campaigns

HCP knowledge, perceptions, and attitudes regarding influenza and influenza vaccination vary. Basic knowledge about influenza and influenza vaccination has been associated with vaccine receipt, and participation in structured in-service education or conferences has been associated with improved vaccination rates. Educational programs should emphasize the benefits of HCP vaccination for staff and patients. Organized campaigns that promote and make vaccine accessible can improve vaccination rates among HCP.

Role Models

Vaccination of senior medical staff or opinion leaders has been associated with higher vaccination acceptance among staff members under their leadership. For example, medical students who have contact with infectious disease specialists are more likely to be vaccinated.

Improved Access

Removing administrative barriers (e.g., costs) and providing vaccine in locations and at times easily accessible by HCP can substantially improve vaccine acceptance. In one survey, 33% of HCP reported that they would reject vaccination if they were required to pay for the vaccine.

Making vaccine readily accessible at congregate areas (e.g., clinics), during conferences, or by use of mobile carts has been demonstrated to improve vaccination coverage rates. Use of mobile carts has been associated with increased vaccine acceptance during outbreaks and nonoutbreak situations. In a 3-year prospective study in a 630-bed acute care hospital, a sustained four- to fivefold increase in vaccination rates was associated with using mobile carts to deliver vaccine to staff rather than requiring HCP to visit an employee health center to receive vaccine. Provision of modest incentives also has been associated with improved vaccine acceptance among HCP. However, the benefits of vaccine deputies or peer-vaccinators have not been consistently associated with improved HCP vaccination.

Measurement and Feedback

HCP influenza vaccination coverage should be regularly measured and reported. Posting of vaccination coverage levels in different areas of the hospital is a component of successful vaccination programs. Monitoring vaccination coverage by facility area (e.g., ward or unit) or occupational group allows facilities to identify where vaccination levels are low and interventions should be targeted. In addition, the Healthcare Infection Control Practices Advisory Committee (HICPAC) has recommended that HCP influenza vaccination coverage be used as a health-care quality measure in those states that mandate public reporting of health-care-associated infections.

The independent contribution of signed declination statements to improving HCP vaccination has not been studied. However, obtaining declination statements from HCP who refuse vaccination for reasons other than medical contraindications can assist facilities in identifying personnel who might require targeted education or other interventions to overcome barriers to vaccine acceptance. In addition, collection of such information will allow health-care facilities to determine what proportion of their staff are reached and offered vaccine.

Legislation and Regulation

Legislative and regulatory efforts have favorably affected hepatitis B vaccination rates among HCP. As of January 2005, a total of 13 states (Alabama, Arkansas, Kentucky, Maine, Maryland, New Hampshire, New York, Oklahoma, Oregon, Pennsylvania, Rhode Island, Texas, and Utah) and the District of Columbia were reported to have enacted regulations regarding influenza vaccination of staff in long-term-care facilities. However, because only one state (Pennsylvania) has monitored the impact of its laws on nursing home staff vaccination rates, data are insufficient to assess the overall impact of these legislative efforts on HCP influenza vaccination coverage.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Pearson ML, Bridges CB, Harper SA. Influenza vaccination of health-care personnel: recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization

Practices (ACIP). MMWR Recomm Rep 2006 Feb 24;55(RR-2):1-16. [137 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Feb 9

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

GUIDELINE COMMITTEE

Healthcare Infection Control Practices Committee
Advisory Committee on Immunization Practices

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site:

- HTML Format
- Portable Document Format (PDF)

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

The following related guideline is available:

- CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2006 Jun 28;55(Early Release):1-41. See the National Guideline Clearinghouse (NGC) summary.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on February 23, 2006.

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